

## GROUP I

### [Thallus corticolous, sterile, sorediate (soralia white) or isidiate]

|    |  |                          |
|----|--|--------------------------|
| 1  | Thallus isidiate.....  | 2                        |
| 1: | Thallus sorediate.....   | 3                        |
| 2  | Thallus K+ yellow, containing thamnolic acid.....                          | <b>P. trichosa</b>       |
| 2: | Thallus K-, containing barbatic acid.....                                  | <b>P. barbatica</b>      |
| 3  | Soralia K+ yellow, red or violet.....                                      | 4                        |
| 3: | Soralia K-.....  | 7                        |
| 4  | Soralia K+ violet, Pd-; hypothamnolic acid present.....                    | 5                        |
| 4: | Soralia K+ yellow or red.....  | 6                        |
| 5  | Soralia UV+ yellow; lichexanthone present.....                             | <b>P. tropica</b>        |
| 5: | Soralia UV-; lichexanthone absent.....                                     | <b>P. novaezelandiae</b> |
| 6  | Soralia K+ yellow then red; norstictic acid present.....                   | <b>P. erythrella</b>     |
| 6: | Soralia K+ yellow; thamnolic acid present.....                             | <b>P. leucosorodes</b>   |
| 7  | Soralia KC-, Pd+ intense yellow; psoromic acid present.....                | <b>P. psoromica</b>      |
| 7: | Soralia KC+ violet, Pd-; lichexanthone and picrolichenic acid present..... | <b>P. verdonii</b>       |

**Pertusaria barbatica** A.W.Archer & Elix, in A.W.Archer, *Biblioth. Lichenol.* 69: 178 (1997)

T: Alfred Natl Park, 19 km E of Cann River, Vic., 21 Sept. 1978, *J.A.Elix* 5249; holo: CANB.

Illustration: A.W.Archer, *op. cit.* 183, fig. 68 (1997).

Thallus pale olive-green, thin, smooth and dull. Soredia absent. Isidia numerous, inconspicuous, simple, rarely branching, concolorous with the thallus, 0.2–0.3 mm tall, c. 0.1 mm wide. Apothecia not seen.

*Chemistry*: Thallus K-, KC-, C-, Pd-; containing barbatic acid (major), 4-O-demethylbarbatic acid (minor to trace) and 3 $\beta$ -hydroxybarbatic acid (trace).

An uncommon, corticolous species in south-eastern Australia (N.S.W., Vic. and Tas.); also in New Zealand.

N.S.W.: Plateau Beech Picnic Area, Werrikimbe Natl Park, *A.W.Archer P810* (NSW); Sassafras Ck, Springwood, 65 km W of Sydney, *A.W.Archer P919* (NSW). Vic.: Drummer Rainforset Walk, 10 km E of Cann River, *J.A. Elix 43572* (CANB). Tas.: 25 km NW of Smithton, *J.A.Elix 40284* (CANB).

The species is one of several sterile, isidiate Australian taxa that are differentiated by chemistry. It resembles *Neophyllis melacarpa* (F.Wilson) F.Wilson (Cladoniaceae), but the latter contains fumarprotocetraric acid (Pd+ red).

**Pertusaria erythrella** Müll.Arg., *Bull. Herb. Boissier* 1: 41 (1893)

T: Lakes Entrance, Vic., 1891, *F.R.M.Wilson 999*; holo: G.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 183, fig. 72 (1997).

Thallus off-white to pale greyish white, slightly cracked and areolate, faintly wrinkled, dull. Isidia absent. Soralia numerous, conspicuous, white, disc-like or subhemispherical, sometimes constricted at the base, 0.5–1.0 mm diam.; upper surface occasionally becoming smooth and pale reddish brown. Apothecia not seen.

*Chemistry*: Thallus K+ yellow then red, KC-, C-, Pd+ yellow; containing norstictic acid (major), connorstictic acid (trace) and  $\pm$ lichexanthone (minor to trace).

An endemic, corticolous species that is usually found in rainforest in eastern Australia (Qld, N.S.W. and Vic.); also on islands in Bass Strait, Tas.

Qld: Bald Mtn, Gambubal S.F., *J.Hafellner 16340* (GZU). N.S.W.: Fitzroy Falls, 16 km SE of Moss Vale, *D.Verdon 3030* (CANB). Vic.: 6 km N of Club Terrace, 60 km ENE of Orbost, *J.A.Elix 19251* (CANB). Tas.: Deal Is., Kents Group, Bass Str., *J.Whinray s.n.* (MEL 1012473).

The lichen is characterised by the sterile, sorediate thallus containing norstictic acid. It resembles *P. leucosorodes* (*q.v.*), but that species contains thamnolic acid.

### ***Pertusaria leucosorodes* Nyl., *Acta Soc. Sci. Fenn.* 26(10): 16 (1900)**

T: Rampodde, Ceylon [Sri Lanka], 1879, *E.Almquist s.n.*; holotype: H-NYL 23821.

*Pertusaria scaberula* A.W.Archer, *Mycotaxon* 41: 240 (1991). T: Sassafras Ck, Springwood, 65 km W of Sydney, N.S.W., 33°43'S, 150°34'E, 16 July 1988, *A.W.Archer P8*; holotype: NSW.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 194, fig. 77 (1997), as *P. scaberula*.

Thallus off-white to greyish white, thin, areolate and cracked, smooth. Isidia absent. Soralia conspicuous, white, becoming numerous towards the thallus centre, flattened and disciform, 0.5–1.5 mm wide. Apothecia not seen.

*Chemistry*: Thallus K<sup>+</sup> yellow, KC<sup>-</sup>, C<sup>-</sup>, Pd<sup>+</sup> yellow; containing thamnolic acid (major), ±lichexanthone (major); rarely with additional norstictic acid.

A corticolous species in W.A., N.T., Qld, N.S.W. and Vic.; also in Sri Lanka, Papua New Guinea and Norfolk Is.

W.A.: Prince Regent River Reserve, NW Kimberley, *A.George 12730* (PERTH). N.T.: Greenant Ck, trail to Tjaetaba Falls, Litchfield Natl Park, 60 km SW of Batchelor, *J.A.Elix 38409* (CANB). Qld: Clarke Ra., 46 km SE of Proserpine, *J.A.Elix 20944* (CANB). N.S.W.: Ben Lomond, 40 km S of Glen Innes, *J.A.Elix 2425* (CANB); Robertson Nature Reserve, Robertson, *J.A.Elix 40732* (CANB). Vic.: Colquhoun S.F., 9 km E of Lakes Entrance, *J.A.Elix 5357* (CANB).

The lichen is characterised by the sterile, sorediate thallus containing thamnolic acid and the frequent occurrence of lichexanthone. *Pertusaria erythrella* is similar in appearance but contains norstictic acid, while *P. psoromica* contains psoromic acid.

### ***Pertusaria novaezelandiae* Szatala, *Borbásia* 1: 60 (1939)**

T: L. Waikare-Moana, New Zealand, 1932, *J.Jablonszky*; holotype: BP T298, *n.v.*

Illustrations: G.Kantvilas, *Lichenologist* 22: 291, figs 1, 3 (1990).

Thallus off-white to pale greyish white, thick, wrinkled and cracked, smooth and dull. Soredia and isidia absent. Apothecia disciform, 0.5–1.5 mm diam.; disc white-pruinose when fertile, occasionally sorediate. Ascospores 1 per ascus, ellipsoidal, (120–) 140–170 × 30–55 μm.

*Chemistry*: Thallus K<sup>+</sup> violet, KC<sup>+</sup> reddish violet, C<sup>-</sup>, Pd<sup>-</sup>, UV<sup>-</sup>; containing hypothamnolic acid (major) and ±conhypoamnolic acid (minor).

This corticolous species occurs mainly in *Nothofagus*-dominated rainforest in south-eastern Qld and in N.S.W., Vic. and Tas.; also in New Zealand.

Qld: Bunya Mtns, Oct. 1919, *J.B.Cleland* (NSW). N.S.W.: 4 km E of Robertson, *J.A.Elix 8891* (CANB); Chaelundi Mtn, 37 km N of Ebor, *D.Verdon 3877* (CANB). Vic.: Mallacoota Inlet, Mallacoota, *A.W.Archer P537* (NSW). Tas.: Mt Barrow, *G.Kantvilas 76/83* (HO).

This species is characterised by monosporous asci and the presence of hypothamnolic acid which is responsible for the K<sup>+</sup> reddish violet reaction. It can be distinguished from *P. tropica* by the absence of lichexanthone and the more southerly distribution.

### ***Pertusaria psoromica* A.W.Archer & Elix, *Mycotaxon* 50: 206 (1994)**

T: Kaiwaka, Otamea County, North Is., New Zealand, *J.K.Bartlett 24219*; holotype: AK 192231.

Illustration: A.W.Archer & J.A.Elix, *op. cit.* 205, fig. 5.

Thallus dull fawn or pale olive-green, areolate and cracked, smooth or subtuberculate, somewhat glossy. Isidia absent. Soralia numerous, conspicuous, discoid or hemispherical, white, initially pustulate, composed of granular soredia, 0.5–2.0 mm diam. Apothecia not seen.

*Chemistry*: Thallus K–, KC–, C–, Pd+ intense yellow; containing psoromic acid (major) and consporomic acid (minor).

This corticolous species occurs in rainforest in eastern Qld and north-eastern N.S.W.; also in Papua New Guinea, Norfolk Is. and New Zealand.

Qld: Mt Baldy, 4 km S of Atherton, *J.A.Elix 16276* (CANB); Mt Windsor Tableland, 45 km NW of Mossman, *J.A.Elix 16445, 16449* (CANB). N.S.W.: Wiangaroo Forest Drive, Tweed Ra., *G.Kantvilas 645/88* (HO, NSW); Bar Mtn Lookout, Border Ranges Natl Park, *A.W.Archer P480* (NSW).

Characterised by conspicuous soralia and the presence of psoromic acid. The latter feature distinguishes it from *P. leucosorodes* which contains thamnolic acid.

### ***Pertusaria trichosa* Elix & A.W.Archer, *Australas. Lichenol.* 67: 15 (2010)**

T: Scrub Rd, Bago Bluff Natl Park, 7 km W of Wauchope, N.S.W., 31°28'45"S, 152°39'36"E, alt. 25 m, on dead wood, 8 Aug. 2008, *J.A.Elix 43276*; holo: CANB.

Illustration: J.A.Elix & A.W.Archer, *op. cit.* 20, figs 5, 6.

Thallus corticolous, off-white to pale fawn, thin, smooth and dull, isidiate; soredia absent. Isidia crowded, cylindrical, thin, simple, pale fawn, becoming brown at the tips, 0.2–0.4 mm tall, 0.03–0.05 mm diam. Apothecia not seen.

*Chemistry*: Thallus K+ yellow; containing thamnolic acid (major).

A very rare corticolous species in eastern N.S.W.; endemic.

N.S.W.: type locality, *J.A.Elix 43280* (CANB).

*Pertusaria trichosa* is characterised by the thin isidia, the presence of thamnolic acid and the absence of apothecia.

### ***Pertusaria tropica* Vain., *Cat. Welw. Afr. Pl.* 2: 404 (1901)**

T: Pungo Andongo, Angola, 730–1160 m, 1857, *F.Welwitsch 429*; lecto: TUR-V 6672, *vide* A.W.Archer, *Biblioth. Lichenol.* 69: 211 (1997).

Illustration: A.W.Archer, *op. cit.* 214, fig. 80.

Thallus off-white to greyish white to greyish green, smooth or tuberculate, glossy, sometimes slightly areolate and cracked. Soredia and isidia absent. Apothecia disciform, often numerous and crowded, 0.6–1.5 (–2.0) mm diam.; discs dark but white-pruinose, sorediate when sterile. Ascospores 1 per ascus, ellipsoidal, (115–) 150–180 × (25–) 35–50 μm; wall 5–10 μm thick.

*Chemistry*: Thallus K+ violet, KC+ wine-red, C–, Pd–, UV+ yellow; containing hypothamnolic acid (major), ±lichexanthone (major); rarely with lichesterinic acid (minor).

Corticolous in north-eastern Qld; also in SW Africa, Thailand, Indonesia and Papua New Guinea.

Qld: track to Mt Lewis, 19 km NNW of Mt Malloy, *J.A.Elix 16902* (CANB); Dawes Ra., 53 km E of Biloela, *J.A.Elix 34747* (CANB); N end of Hinchinbrook Is., *G.N.Stevens s.n.* (BRI).

*Pertusaria tropica* is characterised by 1-spored asci and hypothamnolic acid in the thallus. The temperate Australasian *P. novaezealandiae* lacks lichexanthone.

### ***Pertusaria verdonii* A.W.Archer, in J.A.Elix, H.Streimann & A.W.Archer, *Proc. Linn. Soc. New South Wales* 113: 68 (1992)**

T: near Broken Pine, Mount Pitt Reserve, Norfolk Island, 29°01'30"S, 167°56'20"E, alt. 240 m, on *Elaeodendron* in mixed subtropical rainforest, 2 Dec. 1984, *J.A.Elix 18283*; holo: CANB.

Illustration: A.W.Archer, *op. cit.* 66, fig. 2D.

Thallus olive-green, wrinkled and cracked, smooth and dull, lacking isidia, sorediate. Soralia conspicuous, scattered, hemispherical, concolorous with the thallus, 1.0–1.5 mm diam. Apothecia absent.

*Chemistry*: Thallus K–, KC+ violet, C–, Pd–; containing lichexanthone (major), picrolichenic acid (major) and superpicrolichenic acid (major).

A rare, endemic corticolous species known only from Norfolk Island and north-eastern Qld.

Qld: Tully Gorge, 49 km NW of Tully, *J.A.Elix 36988* (CANB).

The species is characterised by the sorediate thallus and the presence of picrolichenic acid and lichexanthone.